ABSTRACT

PROCESS FOR PRODUCING ELECTRONIC CHIPS CONSISTING OF THINNED SILICON

The invention relates to the fabrication of color image sensors formed on a thinned silicon substrate.

The sensor is fabricated from a semiconductor wafer (10) comprising, on its front face, a thin active layer (12) of semiconductor material, and for this purpose etched layers are formed on the active layer, the wafer is bonded by its front face onto a support substrate (40), the semiconductor wafer is thinned down by its backside, then layers of material are deposited and etched on its backside thus thinned. Also provided are narrow vertical trenches (20, 22, 24, 26) that are etched into the wafer by its front face, before the bonding operation, these trenches extending into the wafer over a depth approximately equal to the residual semiconductor wafer thickness that will remain after the thinning operation, the trenches being filled with a conducting material isolated from the active layer and forming conducting vias (20′, 22′, 24′, 26′) between the front face and the backside of the thinned layer. The purpose of the trenches is to establish electrical connections between the front face and the backside of the thinned wafer. They can also serve as markers for alignment of the front-face features with those on the backside. Lastly, they can be used to electrically isolate regions of active layers from one another.

Figure 10